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Managing Content and Knowledge

CONSORTIUM LEARNING FORUM
BEST-PRACTICE REPORT

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STATEMENT OF PURPOSE

The purpose of publishing this report is to provide a reference point for and insight into the processes and practices associated with certain issues. It should be used as an educational learning tool and is not a "recipe" or step-by-step procedure to be copied or duplicated in any way. This report may not represent current organizational processes, policies, or practices because changes may have occurred since the completion of the study.

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Sponsor Organizations

Boehringer Ingelheim GmbH

Clarica Life Insurance Company

Halliburton Company

Internal Revenue Service

Intel Corporation

Lifeway Christian Resources

National Security Agency

Schlumberger Limited

Social Security Agency

The MITRE Corporation

The World Bank Group

U.S. Department of Agriculture

U.S. Department of Transportation

U.S. Department of Veterans Affairs

U.S. Navy, Acquisition Reform Office

U.S. Navy, Chief Information Office

Xerox Corporation

Partner Organizations

Company A*†

Context Integration Inc.

Dow Corning Corporation

General Electric Company*

Giant Eagle Inc.

Johnson Controls Inc.

Motorola Inc.

Schlumberger Limited*

The MITRE Corporation*

Washington State Library*

**Study included site visit. †Information blinded by request.*

Executive Summary

In the American Productivity & Quality Center's (APQC's) last six consortium studies on leading-edge best practices in knowledge management (KM), APQC has consistently stressed the importance of helping people get the information and knowledge they need to do their jobs. Content management is a central enabler of that. Since focusing on knowledge management in 1996, APQC has witnessed growing pressure by customers to provide content and knowledge online, an explosion of supportive technology, and widespread acceptance of knowledge as a driver of excellence and speed.

We also noticed rising awareness of and concern for the following situations:

- A simple intranet search on a topic can return hundreds of matches; without examining each, the user cannot be sure where the most relevant information lies, who created it, and if it is the most recent version.
- Departments, functions, and communities of practice create and manage their documents and content in idiosyncratic ways that are understandable to their members, but not accessible by the rest of the organization without "the code."
- The surge of creativity and curiosity that followed the popularity of the Internet has led to the creation of hundreds of disparate Web sites in an organization. Marketing is not only concerned that corporate identity has been compromised, but the disparate sources of information that the Web sites are linked to have put out mixed messages to the market.
- Highly paid knowledge workers of every type are spending untold hours searching for, and recreating, content that they strongly suspect already exists in the organization, but they can't find.
- Users want to know they are using the most accurate and up-to-date content.
- Marketing and communication departments create and re-create product information and documents for a variety of systems and users, including external customers. Both the marketers and the customers want to know they are working with the most recent and accurate content.
- The IT organization is asked to provide windows to all of this content, but is not in a position to judge the quality or value of the content to the organization or users.
- More organizations want to make internal content available to customers, yet they fear that the safeguards on quality and security may not be robust enough to support this.

The consortium was formed to study how organizations are effectively addressing these content management challenges.

Content Management Systems

Content management is the system to provide meaningful and timely information to end users by creating processes that identify, collect, categorize, and refresh content using a common taxonomy across the organization. A content management system (CMS) includes people, processes, and technology.

Content can include databases, documents, presentations, or e-mail—virtually any artifact of transactions or dialogue or creative work, inside or outside the organization. But this is more than just documents or presentations; content also includes audio clips, streaming video files, and animated graphics. Increasingly, content management needs to address external content (news feeds, subscriptions to data and analysis, and publications) and content from the extended enterprise (suppliers, customers, vendors, consultants, and external sales). Users want to be able to access internal and external content from the same system and with the same queries, yet still want to know the source of content because it is one way they determine if content is useful or trustworthy.

Why do we talk about content management as a system, not as technology? All organizations are requiring employees to do more with less; reducing the time it takes for workers to gain access to answers is even more critical with the ever-increasing emphasis on speed. But content management technology alone doesn't help this problem, because its focus is typically only on getting more information in front of people—not necessarily the right information.

Content management technology and work flows support a digital publishing process; when they are good, they eliminate online publishing bottlenecks and optimize the reuse of media and content. Content management technology has very little to do with determining the quality or the effectiveness of the information presented. The technology used by study partners was not, in itself, a distinguishing feature of success.

Content is much more than data or information; it is knowledge that has been codified (i.e., an investment has been made to make it explicit) so that it can be more easily distributed and reused for a specific business purpose by a targeted audience. Its value is realized only when people use it to make better decisions for the organization. So, from a KM perspective, the real question for content managers is not "What content do I have?" but "What content do I need?" And what is the best way to get it? Only when these questions are answered, does it makes sense to find technology to enable the digital flow?

In an ideal world, content management would be the nerve center for the enterprise information infrastructure by coordinating the creation and acquisition, management, delivery, and expiration of content across all business systems. As an aggregator, the CMS technology should be able to piece together content from disparate systems and applications into meaningful artifacts based on unique requests. The CMS system should be able to manage the content from these systems, assemble it based on the

Why is Content Management Hot?

- Growing awareness of importance of content in KM
- User demands for up-to-date, accurate, and personalized content
- The magnitude of content has increased dramatically, but the time to find and understand it has not
- Growing number of technology applications and vendors
- Need to empower authors and contributors to create, manage, and publish content
- Growing strategic importance of online services and delivery systems

needs of the content recipient, and publish the information in whatever format is required.

That is the ideal world; the reality is that most organizations have a wealth of information in a variety of repositories ranging from databases to file servers to individual laptops, which are owned and managed by a variety of functions for a variety of purposes. Just plugging in a technology solution is unrealistic. These needs can only be addressed through a systems approach, meaning an integrated system of people, processes, and technology.

STUDY FOCUS

APQC studied, in detail, 10 organizations that were determined by our screening criteria to be effective in content management. We refer to these exemplars as "partners."

All partners—and 11 of the 17 sponsors—completed detailed surveys about their objectives, challenges, and solutions as related to content management. APQC conducted visits, face-to-face and virtual, with five of these partners, in which sponsors also participated to observe operations. Those five were selected because of the maturity and success of their content management systems.

The detailed data collection and site visits focused on the following specific aspects of content management systems:

1. Building a business case for a content management initiative
    - Identify the indicators and need for a CMS.
    - Audit existing content to determine what needs to be managed.
    - Determine the goals for the content management initiative.
2. Designing a content management system
    - Understand user requirements.
    - Identify sources of internal and external content.
    - Design a taxonomy and metadata approach.
    - Develop processes to author, validate, and refresh content.
    - Identify and define the roles and support structure required to implement and maintain a content management process.
3. Delivering the content
    - Identify users that would benefit from the content.
    - Develop applications.
    - Compare personalization to classification.
4. Maintaining content
    - Protect intellectual capital assets—legal and risk issues.
    - Assess the content management process.
    - Analyze costs associated with content management.

The remainder of the report provides details on the components of an effective content management system; the process for designing and implementing a system; how content management and knowledge management relate; and the processes, roles, and organization structure critical to achieving success. Some of the highlights of the consortium findings, as well as characteristics of the partners' content management systems, follows.

Objectives of the Content Management System

Study partners and sponsors had many objectives for their content management systems. Figure 1 shows the percentage of partners and sponsors selecting an objective as one of their top two objectives. Although partners are more likely than sponsors to select "customer satisfaction or service" as a top objective, partners and sponsors are quite similar on other objectives.

Partners kept the customers in mind while designing their CMS, even though most of the applications are not customer-facing. Although it is aimed at getting the right information to employees at the right time, the ultimate goal is a happier customer.

Partners indicated that they have been successful at the top four objectives, but that they do not have measures of how well they make decisions. Some of the less important objectives, such as improved quality of content and reduced costs of managing and delivering content, were frequently cited as benefits achieved through the CMS.

What Are the Current Objectives of Your CM System?

Rank the top five, 1 being the most important	Most important indicator (Sum 1 & 2)	
	Sponsors	Partners
Customer satisfaction or service	18%	40%
Streamline the process of capture, classification, and dissemination of content	36%	30%
Easier, faster access to information	36%	30%
Increased productivity of knowledge work	27%	20%
Standardization of technologies for managing content across the organization	27%	20%
Improved decision making (faster/better)	18%	20%
Ability to create dynamic content	9%	10%
Secure service content	0%	10%
Cost reductions as a result of reduced redundancies, standard, administration procedures, etc.	9%	10%
Decreased need for technical or special training	0%	0%
Reduced costs of managing and delivering content	0%	0%
Possibilities for reselling content	0%	0%
Consistent brand image	0%	0%
Promote reuse and repurpose of existing information	0%	0%
Quality enhancement of content	0%	0%
Time compression	0%	0%
Reduced risk of litigation	0%	0%

Figure 1

Relationship of Content Management and Knowledge Management

Study partners were selected for the maturity of their content management systems and not necessarily because of their knowledge management systems. Yet, 60 percent of partners and 82 percent of sponsors report that they have a KM strategy or approach in their organization.

For many partners, the content management system existed before their knowledge management efforts (Figure 2, page 10). For sponsors, the concept of knowledge management is rapidly expanding to encompass getting information, insights, lessons learned, experts, community peers, training, and other knowledge resources to knowledge workers with appropriate approach. This expanded definition of KM is one of the driving forces for seeking a more robust content management system, and the CM system design reflects some of the needs revealed by KM. Only 50 percent of partners reported an explicit relationship between knowledge management and content management.

How Are Your CM and KM Systems Related?

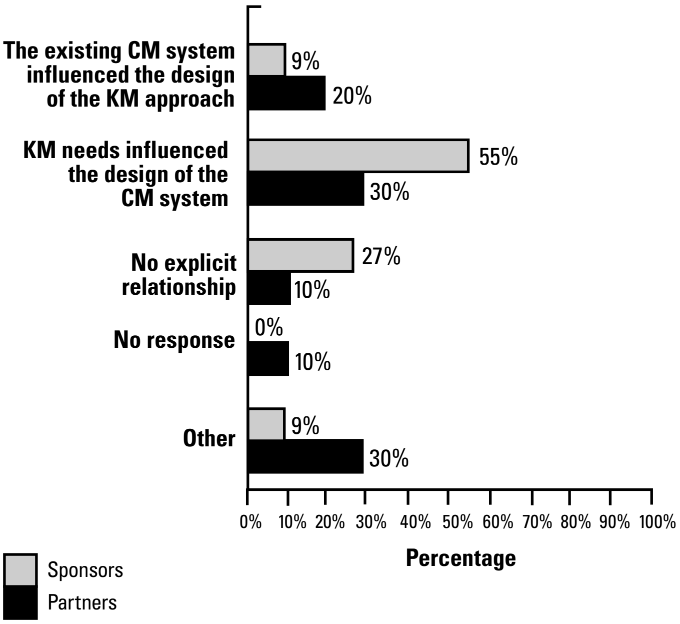


Figure 2

The following statements reflect the three ways partners have positioned CM and KM:

1. "KM and CM are related as our content holds our knowledge, and the terms document, content, and knowledge are frequently used interchangeably. CM and KM are currently working together."
2. "CM really initiated the stewardship approach, which influenced our KM approach to use knowledge managers and stewardship roles."
3. "KM is our primary objective. CM is an important component of our KM strategy. KM influenced the design of the CM approach."

OVERVIEW OF STUDY FINDINGS

From collaboration with sponsors and partners, through surveys and site visits, APQC discovered some overarching themes and findings. The following findings will be covered in more detail in the body of the report.

Organizations considering a CMS, or in the midst of developing one, should be encouraged by the results and experiences reported by the study partners. They have achieved significant levels of improvement in processes, service levels, cost reduction, content quality, and customer and user satisfaction.

1. Partners reported improvements in a large number of functions that are considered important characteristics and outcomes of a successful CMS. Analysis of these data indicates that some functions are more highly correlated with reported improvements than others, which should provide some priorities for focus as CMS systems are designed and implemented.
2. The business case for the CMS investment is often strategic, mission-oriented, and positioned as a cost of doing business, not as an investment requiring a clearly measured ROI. Revenue enhancement opportunities were usually secondary objectives, but at the time of the initial investment, not the primary driver of the partners' business cases.
3. The majority of the partners offset their initial request for funding on the basis of cost reduction and productivity improvement, even though they had a more strategic rationale for the system. The initial investment in content management systems varied from very modest (less than $500,000) to several million. The primary cost driver was labor for design, development, and implementation, not for software and systems. Many of the early-adopter partners developed their own content management applications and are now moving to commercial applications, which will require further investment.

4. Early-adopter partners, currently in Phase 4, were twice as likely to focus on standardization of technology for managing content as a primary objective than are partners and sponsors currently in phases 1 through 3. Yet, technology solutions vary widely across the partners and are not the primary distinguishing characteristic of best practice or satisfaction with the results of a content management system.
5. Partners report significant improvement in a variety of processes as a result of content management systems. However, one of their major areas of dissatisfaction is their struggle to deliver personalized content to their users.
6. Conducting a content audit during the planning and design phase was strongly correlated with every category of improved performance in content management: process improvement, service levels, cost savings, quality of content, and customer satisfaction.
7. Taxonomies and classification systems reflect the way users work and are primarily developed by the organization, not by automated methods.
8. The support roles required for a CMS varied somewhat across organizations, but three common elements were found in all partner organizations: 1) a steering committee; 2) a core group that guided the CMS and created templates, common frameworks, and guiding principles; and 3) the content managers residing in the agencies or business units where content and knowledge is created and used and who have responsibility for content relevancy and accuracy.
9. Organizations provide significant support resources in order to design content management systems and customize information technology applications. The central information technology organization typically funds the infrastructure, development, software, and maintenance. Business units typically underwrite the costs for ongoing content management activities.
10. There is no single technology solution to content management. The key is to understand all the components of the content management process and then look for the technologies that will best fit those needs.
11. When designing a content management system, best-practice organizations keep the user in the center of the design. Then they design the processes around the user and add technology as an enabler to the ideal content management system picture.
12. When purchasing technology, partners assessed the costs required to acquire, customize, support, and implement an application. To get an estimate of overall costs, they included the people costs involved in gathering the data, auditing the data, and supporting the users.

CHARACTERISTICS OF BEST-PRACTICE PARTNERS

Seventeen sponsor organizations participated in this study, 11 of which turned in responses to a detailed questionnaire (the metric survey used in this study). In addition to the data collected from 11 of the sponsor organizations, APQC collected data from 10 partner organizations. Partners were selected for their mature content management systems and because they had addressed the people, process, and technology aspects of the system.

- **Industries represented**—The partners represent many different industries (Figure 3). Study sponsors represented a similar mix of industries, but with a larger representation of government entities (40 percent).
- **Organization size**—Partners range in size from 1,500 users of the content management system to 120,000 users.
- **Enterprise scope of content management systems**—Seventy percent of partners reported that the scope of their CMS is enterprisewide, with 30 percent reporting on systems for one division only.
- **Phase of content management system deployment**—One striking difference between the study partners and sponsors lies in the maturity of their content management systems. Sponsors and partners shared with the study team the current phases of their content management system.
  - Phase 1, business case, includes the identification of strategic rationale for investing in a content management system and an estimate of the costs and benefits to the organization and to users that will result
  - Phase 2, planning and design, includes analysis of needs and current processes and systems, a content audit, requirements capture, vendor assessment and selection, and project design.
  - Phase 3, implementation, includes refining and deploying the content management processes, content structures, staffing, coding, testing, communication, and change management.
  - Phase 4, maintenance and upgrading, includes the evolution of processes, technology, and roles over time. Eighty percent of partners are in Phase 4, and all site-visited partners are in Phase 4. Most of the partners have been in Phase 4 for at least one year (and some for five years). They typically designed their content management systems over five to 10 years, before the current generation of technology enablers became available. Although their technology may not be the newest, their processes, structure and roles, and implementation issues are highly mature and robust; a great deal can be learned.

Industry Representation of Best-Practice Partners

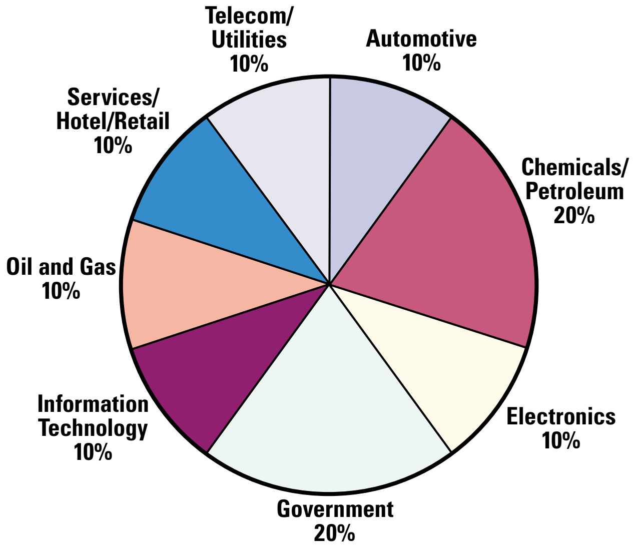


Figure 3

ORGANIZATION OF REPORT

Because content management is a system, not just technology, this report examines the work flow, processes, roles, change management, and technology used in the real world. The investments and results are also addressed. Because selecting content management software and vendors is a major task, a companion report, APQC's *Content Management Vendor Assessment,* further details the features available from vendors as of mid-2001 to enable content management.

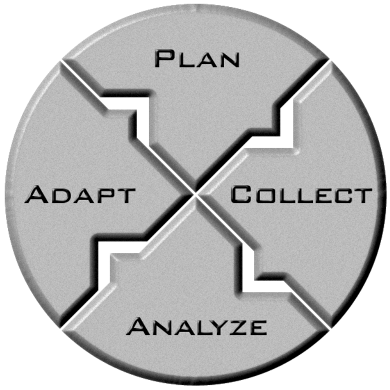
The purpose of this report is to guide the successful design and implementation of content management systems by understanding options and critical success factors and learning from leading organizations. In the remainder of this report, we will explore what partners have learned about positioning, creating, and sustaining a content management system; support structures they have created; technology; enablers and challenges; and results.

- Chapter 1 covers what an ideal content management system would include.
- Chapter 2 addresses how partners developed their business case for a content management system.
- Chapter 3 details how to design and implement the system by reflecting the choices, decisions, and best practices of the study partners.
- Chapter 4 explains the structure and roles—centralized and decentralized—to support a CMS.
- Chapter 5 details the technology approaches and features that are realistic and how they may be integrated to provide the technology support for a content management system.
- Chapter 6 details the investment and costs associated with partners' content management systems, for start-up and on an ongoing basis.
- Chapter 7 reviews the results of the partners' content management systems, success stories, and measures used.

BENCHMARKING METHODOLOGY

The APQC consortium benchmarking methodology was developed in 1993 and serves as one of the premier methods for successful benchmarking in the world. It is an extremely powerful tool for identifying best and innovative practices and for facilitating the actual transfer of those practices.

APQC's Benchmarking Model: The Four-Phased Methodology



Phase 1: Plan

The planning phase of the study began in the early part of 2001. During that period, APQC worked with the technical adviser to identify organizations that were believed to have demonstrated excellence in one or more of the four areas of the study's focus. Each identified company was invited to participate in a screening process. Based on the results of the screening process, as well as company capacity or willingness to participate in the study, the final list of partners was developed.

A kickoff meeting was held in May 2001, during which the sponsors refined the study scope, gave input on the data collection tools, indicated their preferences for site visits to partner organizations, and refined the list of targeted vendors to be included in the vendor assessment survey.

Finalizing the data collection tools and piloting the detailed questionnaire within the sponsor group concluded the planning phase.

Phase 2: Collect

Two tools were used to collect information for this study:

1. **Detailed Questionnaire**—questions designed to collect objective, quantitative data across all participating organizations
2. **Site Visit Guide**—qualitative questions that parallel the areas of inquiry in the detailed questionnaire; serves as the structured discussion framework for all site visits

All partners and sponsors completed the detailed questionnaire. Additionally, three partner organizations (A chemical company, Washington State Library, and General Electric) hosted half-day site visits attended by sponsors and members of the study team. The MITRE Corporation and Schlumberger hosted virtual site visits for study sponsors and members of the study team. The APQC study team prepared written reports (case studies) of each site visit (both of the face-to-face and virtual visits) and submitted them to each respective partner organization for approval and clarification.

Phase 3: Analyze

The subject matter experts and APQC analyzed both the quantitative and qualitative information gleaned from the data collection tools. The analysis focused on examining the processes and technologies in place at sponsor and partner organizations that enable them to provide the right content at the right time to their users. An analysis of the data, as well as case examples based on the site visits, is contained in this report.

Phase 4: Adapt

Adaptation and improvement stemming from the best practices identified through a consortium study occur after the sponsor organizations begin to apply key findings to their own operations. APQC staff members are available to help organizations create action plans appropriate for the organization based on the study.

SUBJECT MATTER EXPERT

Dr. Carla O'Dell

Dr. Carla O'Dell is president of APQC and also serves as director of the Center's International Benchmarking Clearinghouse.

In 1987 O'Dell designed and led for the Center the largest national study ever conducted on innovative reward systems. The study of 1,600 firms employing more than 9 million people still serves as the benchmark study in the field.

In 1991 O'Dell led 80 corporations through a design process to create the Clearinghouse. Since launching its services in 1992, more than 500 major corporations and government agencies worldwide have joined, using APQC's Clearinghouse to support the identification and rapid transfer of best practices.

The work of APQC and O'Dell in knowledge management (KM) dates to 1995, when APQC conducted the nation's largest symposium on KM with more than 500 attendees. Based on issues raised at the symposium, APQC launched, under O'Dell's direction, its first consortium study, *Emerging Best Practices in Knowledge Management,* with 39 companies. She later led a second study, *Using Information Technology to Support Knowledge Management*, with 25 of the leading KM companies in the world. Most recently she served as the subject matter expert for a study titled *Successfully Implementing Knowledge Management.* She currently heads APQC's efforts to help clients design and implement knowledge management and best-practice transfer initiatives.

O'Dell is co-author with Dr. C. Jackson Grayson of *American Business: A Two-Minute Warning*, which Tom Peters said "gets my vote as the best business book in 1988." Also with Grayson, O'Dell has co-authored *If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice,* published in the fall of 1998 by Simon & Schuster. She publishes several articles a year in leading business journals.

A popular keynote speaker at senior executive events, O'Dell frequently appears on business television. She holds a bachelor's degree from Stanford University, a master's degree from the University of Oregon, and a Ph.D. in industrial and organization psychology from the University of Houston.

TECHNICAL ADVISER

Qusai Mahesri

Qusai Mahesri, chief knowledge officer for Springbow Solutions, served as this study's technical adviser. Mahesri advises his strategic team on leveraging knowledge assets within Springbow to improve productivity and differentiate Springbow in the marketplace. His charter is to create a framework to manage intellectual, structural, and people capital. Mahesri has played various technical and executive roles at Rockwell International, Nth Graphics, CompuCAD, BSG, Context Integration, and ISANI.com.

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